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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/826,469
Filing Date: April 16, 2004
Appellant(s): REZNIK, YURIY A.

Adam L. K. Philipp
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 11/13/2009 appealing from the Office action mailed 9/17/2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

20020094535	Nadon et al.	7-2002
6,094,636	Kim, Yeon-bae	7-2000
3,694,813	Loh et al.	9-1972

Robinson T, "SHORTEN: Simple lossless and near-lossless waveform compression", Technical report CUED/F-INFENC/TR.156, Cambridge University, UK. (December 1994), pp. 1-16.

Hasegawa-Hohnson et al. "Speech coding: fundamentals and applications", Wiley Encyclopedia of telecommunications, (December 2002), pp. 1-33.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4, 7-15, and 19-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Robinson ("Shorten: simple lossless and near-lossless waveform compression", 1994, hereinafter referred to as Robinson) in view of Nadon et al. (US PG Pub. 2002/0094535, hereinafter referred to as Nadon).

Regarding claim 1, Robinson discloses a method comprising:

applying a prediction filter to a unit of audio signal data (**page 2, section 3**);

determining a distribution substantially representative of residual data generated as part of said applying of a prediction filter to the unit of audio signal data (**page 4, section 3.3, figure 2 and 3**); and

transmitting in substance the unit of audio signal data to a recipient (**page 11, shorten command line, the compressed data can be saved to a file or piped out to another program**), utilizing the determined distribution to assist in reducing the amount of data having to be transmitted (**page 4, section 3.3, residual coding**).

Robinson discloses modeling the predictive residual with a Gaussian or Laplace function (**fig. 2**). He does not discloses determining of the statistical distribution

comprises determining a plurality of statistical measures, including at least one of a skewness of the distribution, and a kurtosis of the distribution.

Nadon discloses measuring skewness and kurtosis of a distribution. Nadon also pointed out that skewness and kurtosis are standard statistical measurements of a distribution and are described in a statistical book (**Nadon, [0057]**).

Both Robinson and Nadon are measuring the distribution of data. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine Robinson's teachings with Nadon's teaching to include skewness and kurtosis measurements of the residual distribution to improve reliability and accuracy (**Nadon, Abstract**).

Regarding claim 2, which depends on claim 1, Robinson in view of Nadon discloses all limitations of claim 1, Robinson further discloses receiving a portion of a stream of audio signal data (**page 2, signal s(t)**); and partitioning the stream of the audio signal data into a plurality of units of audio data (**page 3, section 3.1, blocking and time frame**).

Regarding claim 3, which depends on claim 2, Robinson in view of Nadon discloses all limitations of claim 2, Robinson further discloses the partitioning comprises

partitioning the stream of the audio signal data into a plurality of fixed-size units of audio signal data **(page 3, section 3.1, the default frame size is 256 samples)**.

Regarding claim 4, which depends on claim 2, Robinson in view of Nadon discloses all limitations of claim 2, Robinson also discloses the method further comprises:

selecting one of the plurality of units of audio signal data partitioned from the portion of the stream of audio signal data; performing said applying, determining and transmitting operations of claim 1 for the selected unit of audio signal data; and repeating the selecting and performing until all units of the partitioned audio signal data have been transmitted in substance to the recipient **(page 1-10, the utility program "shorten" compresses a signal on frame-by-frame base until all frames are processed and saves the compressed signal in a file)**.

Regarding claim 7, which depends on claim 1, Robinson in view of Nadon discloses all limitations of claim 1, Robinson further discloses transmitting a plurality of parameters of the prediction filter to the recipient **(page 3, section 3.2, prediction coefficients a_i, page 11, transmitting each filter coefficient requires about 7 bits)**.

Regarding claim 8, which depends on claim 7, Robinson in view of Nadon discloses all limitations of claim 7, Robinson further discloses the applying comprises applying a linear prediction filter having a prediction order p, and prediction coefficients

$a_1, \ldots, a_p$; and the transmitting of the parameters of the prediction filter comprises transmitting the prediction order p, information about quantization step size used to quantize prediction coefficients, and quantized versions of the prediction coefficients $a_1, \ldots, a_p$ (**page 2, eq. 1, page 11, "shorten" command line option "-p prediction order", page 7, section 3.2, the prediction coefficients, a_i, are quantized**).

Regarding claim 9, which depends on claim 1, Robinson in view of Nadon discloses all limitations of claim 1, Robinson further discloses the residual data comprises a plurality of residual samples (**page 4, section 3.3, samples in prediction residual**); the determining of the statistical measure further comprises determining a variance of the residual samples or an estimate of the variance (**page 8, the variance of the prediction residual of the original waveform is estimated**); forming a residual data distribution descriptor based at least in part on the determined variance of the residual samples or its estimate, the distribution descriptor identifying the substantially representative distribution to the recipient (**section 3.3, the problem of residual coding is therefore to find an appropriate form for the probability density function (PDF), mean and variance of a Gaussian distribution function (**a residual data distribution descriptor**))**; and the transmitting comprises transmitting the residual data distribution descriptor to the recipient (**page 5, Huffman code for this distribution**).

Regarding claim 10, which depends on claim 9, Robinson in view of Nadon discloses all limitations of claim 9, Robinson further discloses the determining of the

statistical measures further comprises determining a mean of the residual samples; and the forming of the residual data distribution descriptor is further based on the determined mean of the residual samples **(figure 2, residual signal is modeled by Gaussian or Laplacian distribution function, both are characterized by mean and variance)**.

Regarding claim 11, which depends on claim 9, Robinson in view of Nadon discloses all limitations of claim 9, Robinson discloses forming the residual data distribution descriptor including variance **(page 8, the variance of the prediction residual of the original waveform is estimated)**. Nadon discloses measuring skewness and the kurtosis of the distribution **(Nadon, [0057])**. The combined teachings of teaches the forming of the residual data distribution descriptor is further based on the determined at least selected one of the skewness and the kurtosis of the residual samples.

Regarding claim 12, which depends on claim 1, Robinson in view of Nadon discloses all limitations of claim 1, Robinson further discloses the residual data comprises a plurality of residual samples **(page 4, section 3.3, samples in prediction residual)**; the method further comprises determining a number of least significant bits (LSB) of each residual sample to be sent to the recipient **(page 5, the *n* low order bits** (least significant bits**) then follow, as in the example in table 1)**; and the transmitting comprises transmitting to the recipient how many LSB of each residual sample will be

transmitted to the recipient and the appropriate number of LSB of each of the residual samples (**page 5, table 1**).

Regarding claim 13, which depends on claim 12, Robinson in view of Nadon discloses all limitations of claim 12, Robinson further discloses the method further comprises determining a reconstructed inverse-quantized mean value of the residual samples, and the determining of the LSB of each residual sample to be sent to the recipient is performed based at least in part on the determined reconstructed inverse-quantized mean value of the residual samples **(page 3, section 3.2, on each iteration the mean squared value of the prediction residual is calculated and this is used to computer the expected number of bits needed to code the residual signal**).

Regarding claim 14, which depends on claim 1, Robinson in view of Nadon discloses all limitations of claim 1, Robinson further discloses the residual data comprises a plurality of residual samples, each having a plurality of data bits **(page 4, section 3.3, samples in prediction residual, page 5, table 1, residual samples have a plurality of data bits**); the method further comprises encoding the most significant bits (MSB) of each of the residual samples, employing codes constructed using the determined substantially representative distribution **(page 5, Huffman code for this distribution**); and the transmitting comprises transmitting the encoded MSB of the residual samples to the recipient **(page 5, the high order bits (**most significant bits**) are treated as an integers**).

Regarding claim 15, which depends on claim 14, Robinson in view of Nadon discloses all limitations of claim 14, Robinson further constructing the codes using the distribution, the constructed codes being Huffman codes (**page 5, Huffman code for this distribution**).

Regarding 19, Robinson discloses an apparatus (**page 9, Shorten running on SGI workstation**) comprising

a prediction filter (**page 2, equation 1**);

a transmission unit (**page 11, shorten command line, the compressed signal is saved to a file or sent to a program**); and

a control unit (**page 9, CPU in SGI workstation**) coupled to the prediction filter and the transmission unit, and adapted to apply the prediction filter and a plurality of statistical measures of the distribution to a unit of audio signal data to a recipient, and to use the transmission unit to transmit in substance the unit of audio signal data to the recipient, utilizing a distribution substantially representative of the residual data generated by the prediction filter to assist in reducing the amount of data having to be transmitted by the transmission unit (**page 4, section 3.3 residual coding**).

Robinson does not disclose wherein the statistical measures include at least one of a skewness of the distribution, and a kurtosis of the distribution.

Nadon discloses measuring skewness and kurtosis of a distribution. Nadon also pointed out that skewness and kurtosis are standard statistical measurements of a distribution and are described in a statistical book (**Nadon, [0057]**).

Both Robinson and Nadon are measuring the distribution of data. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine Robinson's teachings with Nadon's teaching to include skewness and kurtosis measurements of the residual distribution to improve reliability and accuracy (**Nadon, Abstract**).

Regarding 20, which depends on claim 19, Robinson in view of Nadon discloses all limitations of claim 19, Robinson further discloses the control unit is adapted to use the transmission unit to transmit a plurality of parameters of the prediction filter to the recipient (**page 3, section 3.2, linear prediction, prediction coefficients, a_i, are quantized**).

Regarding 21, which depends on claim 19, Robinson in view of Nadon discloses all limitations of claim 19, Robinson further discloses the control unit is adapted to use the transmission unit to transmit a residual data distribution descriptor, formed using at least some of the statistical measures of the residual data, to the recipient, the distribution descriptor identifying the substantially representative distribution, and the statistical measures are employed to identify the substantially representative distribution

(**figure 2 and 3, residuals are modeled by a Gaussian or Laplacian distribution function, section 3.3, Huffman code for this distribution**).

Regarding 22, which depends on claim 19, Robinson in view of Nadon discloses all limitations of claim 19, Robinson further discloses the apparatus further comprises a computation unit coupled to the prediction filter and the control unit, and adapted to compute at least a plurality of statistical measures for the residual data generated by the prediction filter (**section 3.3, a computer with CPU estimates and models the distribution of a residual signal with a Gaussian function. The Gaussian function has a plurality of statistical measures, mean and variance**).

Regarding 23, which depends on claim 19, Robinson in view of Nadon discloses all limitations of claim 19, Robinson further discloses the residual data comprises a plurality of residual samples having data bits (**section 3.3, the samples of residual, a number is divided into a sign bit, the nth low order bits and the remaining high order bits**), and the control unit is adapted to use the transmission unit to transmit a plurality of the least significant bits (LSB) of each of the residual sample (**table 1, lower bits (**least significant bits**)**), to the recipient, the LSB of each of the residual sample transmitted being determined based at least in part on the determined substantially representative distribution (**page 5, Huffman code for this distribution**).

Regarding 24, which depends on claim 19, Robinson in view of Nadon discloses all limitations of claim 19, Robinson further discloses the residual data comprises a plurality of residual samples having data bits **(section 3.3, the samples of residual, a number is divided into a sign bit, the nth low order bits and the remaining high order bits**), and the control unit is adapted to use the transmission unit to transmit a plurality of codes, encoding the most significant bits (MSB) of each of the residual sample **(page 5, the high order bits (**most significant bits**) are treated as an integer**), to the recipient, the codes being constructed based at least in part on the determined substantially representative distribution of the residual samples **(page 5, Huffman code for this distribution**).

Regarding 25, which depends on claim 24, Robinson in view of Nadon discloses all limitations of claim 24, Robinson further discloses an encoder adapted to encode the MSB of each of the residual samples, using codes constructed from determined substantially representative distribution of the residual samples **(section 3.3, the problem of residual coding is therefore to find an appropriate form for the probability density function, Huffman code for this distribution, a number is divided into a sign bit, the nth low order bits and the remaining high order bits, the high order bits are treated as an integer**).

Regarding 26, Robinson discloses an apparatus **(page 9, Shorten running on SGI workstation**) comprising

a receiver unit (**computer read from a compressed file**);

a decoder coupled to the receiver unit **(page 14, shorten command line option –x, reconstruct the original file**); and

a control unit coupled to the receiver unit and the decoder, and adapted to use the decoder to recover a unit of audio signal data from an encoded transmission of the unit of audio signal received by the receiver unit (**CPU running on a computer reads compressed data and reconstruct the original file**), the encoded transmission included encoded most significant bits (MSB) and unencoded least significant bits (LSB) of residual samples of residual data generated by a prediction filter applied to the unit of audio signal data (**section 3.3, residual coding, to form a code, a number is divided into a sign bit, the nth low order bits and the remaining high order bits**).

Robinson discloses an audio signal is lossless encoded based on the residual distribution which is modeled with Laplace function and have variance statistic measure (**Robinson, section 3.3, residual coding, eq. 11**). Robinson does not disclose the statistics measure including at least one of a skewness of the distribution of the residual samples, and a kurtosis of the distribution of the residual samples.

Nadon discloses measuring skewness and kurtosis of a distribution. Nadon also pointed out that skewness and kurtosis are standard statistical measurements of a distribution and are described in a statistical book (**Nadon, [0057]**).

Both Robinson and Nadon are measuring the distribution of data. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine Robinson's teachings with Nadon's teaching to include skewness and kurtosis measurements of the residual distribution to improve reliability and accuracy (**Nadon, Abstract**).

Regarding claim 27, which depends on claim 26, Robinson in view of Nadon discloses all limitations of claim 26, Robinson further discloses the control unit is further adapted to at least contribute in causing a inverse-quantized mean of the residual samples to be reconstructed (**page 3, section 3.2, on each iteration the mean squared value of the prediction residual is calculated and this is used to computer the expected number of bits needed to code the residual signal**).

Regarding claim 28, which depends on claim 26, Robinson in view of Nadon discloses all limitations of claim 26, Robinson further discloses the distribution descriptor identifies the substantially representative distribution of the residual samples (**fig. 2**), and the control unit is further adapted to at least contribute in causing the substantially representative distribution to be available to the decoder for use to decode a plurality of codes received by the receiver unit, the codes encoding the MSB of the residual samples (**section 3.3, residual coding**).

Regarding claim 29, Robinson discloses a system **(page 9, Shorten running on SGI workstation)** comprising:

a prediction filter **(page 2, equation 1)**;

a transmission unit **(page 11, a compressed signal is saved to a file or sent to a program)**;

a receiver unit (**computer reads from a file or from a program**);

a decoder unit (**page 14, shorten command line option –x, reconstruct the original file**); and

a control unit (**page 9, CPU in SGI workstation**) coupled to the prediction filter and the transmission unit, and adapted to apply the prediction filter to a first unit of audio signal data to a recipient, and to use the transmission unit to transmit in substance the first unit of audio signal data to the recipient, utilizing a distribution substantially representative of the residual data generated by the prediction filter to assist in reducing the amount of data having to be transmitted by the transmission unit, wherein the plurality of statistical measures include at least one of a skewness of the distribution, and a kurtosis of the distribution, the control unit being further coupled to the receiver unit and the decoder unit, and adapted to use the decoder to recover a second unit of audio signal data from an encoded transmission of the second unit of audio signal received by the receiver unit, the encoded transmission included encoded most significant bits (MSB) and unencoded least significant bits (LSB) of residual samples of residual data generated by a prediction filter applied to the second unit of audio signal data **(pages 1-10)**.

Robinson discloses an audio signal is lossless encoded based on the residual distribution which is modeled with Laplace function and have variance statistic measure (**Robinson, section 3.3, residual coding, eq. 11**). Robinson does not disclose the statistics measure including at least one of a skewness of the distribution of the residual samples, and a kurtosis of the distribution of the residual samples.

Nadon discloses measuring skewness and kurtosis of a distribution. Nadon also pointed out that skewness and kurtosis are standard statistical measurements of a distribution and are described in a statistical book (**Nadon, [0057]**).

Both Robinson and Nadon are measuring the distribution of data. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine Robinson's teachings with Nadon's teaching to include skewness and kurtosis measurements of the residual distribution to improve reliability and accuracy (**Nadon, Abstract**).

Regarding claim 30, which depends on claim 29, Robinson in view of Nadon discloses all limitations of claim 29, Robinson further discloses a transceiver unit comprising the transmitter and receiver units (**a computer (SGI workstation) has input and output function**).

Regarding claim 31, which depends on claim 29, Robinson in view of Nadon discloses all limitations of claim 29, Robinson further discloses an encoder unit coupled to the prediction filter and the transmission unit, to encode the MSB of the first unit of audio signal data, the MSB of the first unit of audio signal data being determined based at least in part on statistical measures of the residual samples generated by the prediction filter, when applied to the first unit of audio signal data (**section 3.3, residual coding**).

Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Robinson in view Nadon and further in view of Hasegawa-Johnson et al. ("Speech coding: fundamentals and applications", December 2002, hereinafter referred to as Johnson).

Regarding claim 5, which depends on claim 2, Robinson in view of Nadon discloses all limitations of claim 2. Robinson in view of Nadon does not say further partitioning the selected one of the first plurality of units of audio signal data into a second plurality of units of audio signal data. Johnson discloses further partitioning a speech frame into sub-frames and processing each sub-frame (**Johnson, page 7, section 4.4, in order to take advantage of the slow rate of change of LPC coefficients without sacrificing the quality of the coded residual, most LPC-AS coders encode speech using a frame-subframe structure**). The combined teachings teach all limitations of this claim.

Robinson in view of Nadon and Johnson are analogous art because they are from a similar field of endeavor in audio (speech) coding. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Robinson's teaching with Johnson's teaching to further partition a frame of residual signal into subframes and process each subframes to take advantage of the slow rate of change of LPC coefficients without sacrificing the quality of the coded residual **(Johnson, page 7, section 4.4)**.

Regarding claim 6, which depends on claim 5, Robinson, Nadon and Johnson disclose all limitations of claim 5. Robinson further discloses repeating the further partitioning, the selecting, the performing, and the repeating of claim 5, until all of the first plurality of units of audio signal data have been transmitted in substance to the recipient **(Robinson, page 1-10, shorten program compresses a signal on a frame-by-frame base until all frames are processed, Johnson teaches partitioning each frame into subframes and processing each subframe, combined teachings teach all limitations of this claim)**.

Claims 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Robinson in view Nadon and further in view of Kim (US Pat. 6, 094,636).

Regarding claims 16 and 18, which depends on 14, Robinson in view of Nadon discloses all limitations of 14, Robinson discloses constructing codes using the Huffman algorithm but does not say constructing codes using the run-length or arithmetic algorithm. Kim discloses constructing codes using Huffman, run-length or arithmetic algorithm **(Kim, col. 8, lines 9-10)**.

Robinson and Kim are analogous art because they are from a similar field of endeavor in audio coding. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Robinson's teaching with Kim's teaching to substitute the Hoffman coding algorithm with the run-length or arithmetic coding algorithm. All these coding algorithms are well known in variable length coding art. Simple substitution of one known element for another would obtain predictable results.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Robinson in view of Nadon and further in view of Loh (US Pat. 3,694,813, hereinafter referred to as Loh).

Regarding claim 17, which depends on 14, Robinson in view of Nadon discloses all limitations of 14, Robinson discloses constructing codes using the Huffman algorithm but does not say constructing codes using the Gilbert-Moore algorithm. Loh discloses constructing codes using the Gilbert-Moore algorithm **(Loh, col. 4, line 42)**.

Robinson and Loh are analogous art because they are from a similar field of endeavor in compressing data. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Robinson's teaching with Loh's teaching to substitute the Hoffman coding algorithm with the Gilbert-Moore algorithm. All these coding algorithms are well known in variable length coding art. Simple substitution of one known element for another would obtain predictable results.

(10) Response to Argument

Regarding rejection to claims 1-4, 7-15 and 19-31 under 35 U.S.C. 103 (a) over Robinson in view of Nadon, the appellant first argues (Appeal Brief, pages 18-21, Issue 1, (A)) that Nadon is non-analogous art because claim 1 is related to the audio compression while Nadon is directed to an entirely different field and utility. The appellant further argues one of ordinary skill in the art who is considering the problem of compressing audio for transmission would be completely unaware of reference from genomics, a completely unrelated field of endeavor.

In response, the Examiner notes that the claimed invention is directed to method and apparatus of compressing audio data based on statistical measurements of prediction residual data. Robinson discloses a method of lossless compressing audio

data by modeling the prediction residual data with a Gaussian distribution or Laplace distribution (**Robinson, fig. 2 and 3**).

Robinson discloses determining a plurality of statistics measures such as mean value and variance of Gaussian function and Laplace function (fig. 2, fig. 3, shows residual data are model with a Gaussian distribution and Laplace distribution, mean value is zero, page 7, shows variance is represented as σ). The only missing part in Robinson's teaching is using a statistical measurement of skewness or kurtosis.

Nadon discloses a method of modeling residual data as a normal distribution (Normal distribution is also known as Gaussian distribution). To assess whether the distribution of residual data being normally distributed, Nadon measures skewness and kurtosis of the distribution (**Nadon, [0057]**).

MPEP 2141.01 (a) states **>"Under the correct analysis, any need or problem known in the field of endeavor at the time of the invention and addressed by the patent [or application at issue] can provide a reason for combining the elements in the manner claimed. " KSR International Co. v. Teleflex Inc., 550 U.S. ___, ___, 82 USPQ2d 1385, 1397 (2007). Thus a reference in a field different from that of applicant's endeavor may be reasonably pertinent if it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his or her invention as a whole.<

The appellant cited MPEP 904.01 and admitted that "**a tea mixer**" and "**concrete mixer**" are analogous art even though tea and concrete are in an entirely different field of art. Similarly, "**brick cutting**" and "**biscuit cutting**" may be considered as having the same necessary function (Appeal Brief, page 18). Both Robinson and Nadon are dealing with a problem of modeling residual data as a Gaussian (Normal) distribution (**Robinson, fig. 2, Nadon, fig. 2**). Therefore, Rabinson and Nadon are analogous and also reasonably pertinent art. One of ordinary skill in the art would look at Nadon's reference to measure skewness/kurtosis to verify if a distribution of data is a Gaussian (Normal) distribution.

As pointed by Nadon that skewness and kurtosis are standard statistical measurements from a common statistical text book (**Nadon, [0057]**), the Examiner notes that a standard statistic measurement can be applied to any data regardless whether the data are obtained from speech signals or from genomic samples. For example, a well-known Microsoft Excel spreadsheet (Microsoft Office'97) provides build-in function SKEW()for analyzing skewness and KURT() function for analyzing kurtosis of the data in a spreadsheet. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Robinson's teaching with Nadon's teaching to measure skewness and/or kurtosis of distribution to improve reliability and accuracy of the model.

The appellant further argues (Appeal Brief, pages 20-22, Issue 1, (B)) that it would not have been predictable for one having ordinary skill in the art to combine Robinson and Nadon. The appellant states [residual] data in Nadon's teaching are obtained from genomic samples while Robinson is directed to audio waveform, the subject matter of these references is clearly different, such combination would not have been predictable or obvious to one having ordinary skill in the art.

In response, the Examiner notes the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Both Robinson and Nadon are dealing with a problem of modeling residual data as a Gaussian distribution and measuring statistical properties of residual data. As pointed out by Nadon, skewness and kurtosis are standard statistical indices taught in a statistical text book, the combined teaching of Robinson and Nadon teaches measuring skewness/kurtosis of residual data. Since skewness/kurtosis is a standard statistical measures, the results would be predicable to one having ordinary skill in the art. One having ordinary skill in the art would have been motivated to make such a modification to improve reliability and accuracy of distribution model **(Nadon, Abstract**).

The appellant further argues (Appeal Brief, pages 22-23, Issue 1, (C)) that Robinson and Nadon teach away from each other and one of ordinary skill in the art would lack a motivation to make the proposed combination. The appellant states that Robinson has an entirely different essential function or utility from the subject matter of Nadon, and therefore teach away from each other.

In response, the Examiner notes disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments. In re Susi, 440 F.2d 442, 169 USPQ 423 (CCPA 1971). Furthermore, "[t]he prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed.." In re Fulton, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004). Robinson does not criticize, discredit applying other statistical measurements (e.g., skewness or kurtosis) to the residual data. Therefore, Robinson and Nadon do not teach away from each other.

The appellant further argues (Appeal Brief, page 23, Issue 1, (C)) that modification of Nadon to reach the elements claims 1-4, 7-15 and 19-31 would render Nadon unsatisfactory for its intended purpose or its essential function or utility.

In response, the Examiner notes that the proposed modification in the Office Action was to modify Robinson's teaching by Nadon's teaching to measure skewness/kurtosis of distribution of residual data. The Examiner did NOT proposed modifying Nadon to reach the elements claims 1-4, 7-15 and 19-31.

Regarding dependent claims 5-6 and 16-18, the appellant traverse the rejection for similar reasons (Appeal Brief, pages 23-24, Issues 2-5)). In regards to such arguments, see the above responses to the arguments for claims 1-4, 7-15 and 19-31.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Jialong He/

Patent Examiner, Art Unit 2626

/Richemond Dorvil/
Supervisory Patent Examiner, Art Unit 2626

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